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THE PLANT DISEASE REPORTER

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Division of Mycology and Disease Survey

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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Vol. XXII

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IN THIS ISSUE

Volume XXII has a good start in this first number, with papers on many and varied subjects.

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High percentages of cotton seed infection with Fusarium and Glomerella were demonstrated in North Carolina in 1936, according to S. G. Lehman, page 4.

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Brief notes on plant diseases, page 24, include potato late blight in eastern Virginia, by Harold T. Cook; Verticillium on coleus in Connecticut, by Florence A. McCormick; and chrysanthemum rust in Louisiana, by A. G. Plakidas.

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REACTIONS OF VARIETIES OF SNAP BEANS TO RUST

G. R. Townsend

Bean rust (Uromyces phaseoli typica) became epiphytotic on snap beans in southern Florida during the winter and spring seasons of 1935-36 and 1936-37. The complete failure in these seasons of several thousand acres of Bountiful and Black Valentine beans showed that these varieties were very susceptible to the form of U. phaseoli typica present in Palm Beach and Broward counties in those years. In 1918 Fromme and Wingard 1/ reported that Bountiful and Black Valentine beans were somewhat tolerant or even resistant to rust and a similar reaction was reported in 1935 2/ by Harter, Andrus, and Zaumeyer. Thus, the epiphytotics of rust on these varieties in southern Florida appeared to be an unusual reaction.

It is well known that many species of the rust fungi are really a group of morphologically similar, but biologically distinct forms. This may be the explanation of the rust epiphytotic on supposedly tolerant bean varieties. Harter, in letters and in conversations with the writer, has indicated that he has evidence that there are several biologic forms of U. phaseoli typica. In 1936 he found that specimens of the rust sent to him belonged to form 2, and to another unidentified form. None of the rust fungi in the 1936 specimens were found to belong to form 1 of U. phaseoli typica. This seemed to be a satisfactory explanation of the unexpectedly severe infection of Bountiful and Black Valentine beans.

In the spring of 1937 Harter collected specimens of the rust on Bountiful beans growing in Palm Beach County. He found by inoculation tests that most of the rust fungi in these specimens belonged to form 1, and a few to form 2 of U. phaseoli typica. This result seemed to be very confusing for the reason that the Bountiful bean plants from which the specimen leaves were taken appeared to be very susceptible.

In the March 15, 1937 3/ issue of the Plant Disease Reporter the reactions of a number of bean varieties to the local form of bean rust were given. These results were obtained in a series of inoculation tests during

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1/ Fromme, F. D. and S. A. Wingard, Bean rust: Its control through the use of resistant varieties. Virginia Agr. Exp. Sta. Bull. 220. 1918.

2/ Harter, L. L., C. F. Andrus, and W. J. Zaumeyer. Studies on bean rust caused by Uromyces phaseoli typica. Jour. Agr. Res. 50:737-759. 1935.

3/ Townsend, G. R. Bean rust in southern Florida. The Plant Disease Reporter 21:96. 1937.

the winter and no irregularity in the results was noted from one test to another. In the spring the remaining seeds of ten of these varieties were sent to plant pathologists in other sections of the country, with the request that they be grown during the summer and a report be made on the reaction of the varieties. The reports showed that no rust occurred at Homestead, Florida, Santa Maria, California, and Ithaca, New York at the time that these test varieties were growing, but it was prevalent in five other localities. The data from these tests and also from the local tests are given in Table 1.

Since the terms used by the cooperators to describe the varietal reactions were not uniform the writer has interpreted their reports under the terms used in Table 1 which are defined as follows:

Severe - Sori very abundant and host plant injured.
Moderate - Fewer sori and less injury.
Slight - Only a few sori and no injury.
Trace - Sori averaging less than one per plant and no injury.
Flecking - Necrotic spots on leaves but no sori; some injury.
None - Neither sori nor necrotic flecks.

Table 1. Reactions of bean varieties to rust.

Location	Belle Glade Florida	Gainesville Florida	Quincy Florida	Tifton Georgia	Orono Maine	Norfolk Virginia
Cooperator	Townsend	Weber	Kincaid	Gaines	Steinmetz	Cook
Date of Test	Jan-Apr.	June	June	July	August	October
Bountiful	Severe	Moderate	None	Slight	Slight	Severe
Tendergreen	Severe	Slight	Slight	Moderate	Slight	Moderate
Black Valentine	Severe	Slight	None	Moderate	Slight	Severe
Kentucky Wonder	Slight	Severe	Severe	Severe	Severe	Slight
6649	Trace	Moderate	Severe	Severe	Slight	None
6651	Trace	Moderate	Slight	Trace	Slight	Trace
6657	Slight	Moderate	Slight	Severe	------	Slight
6658	Flecking	Moderate	Slight	Severe	Moderate	Moderate
6659	Flecking	Moderate	Slight	Severe	Moderate	Slight
6669	Slight	Moderate	Moderate	Severe	None	Trace

It may be seen from these results that the reactions of these varieties varied considerably from one locality to another. Even within the state of Florida, the reaction of the Bountiful variety was reported as severe, moderate, and none. Similar variations in reaction were reported for several other varieties. This can hardly be due to a lack of inoculum since in all of the localities one or more of the varieties showed a severe reaction to U. phaseoli typica.

At Orono, Maine and Tifton, Georgia the test varieties reacted in such a way that we might assume the pathogen was U. phaseoli typica form 1

as described in earlier reports (footnotes 1 and 2). The reactions of the test varieties at Norfolk, Virginia and Belle Glade, Florida were distinctly different from those obtained in Maine and Georgia, and also showed slight differences between Virginia and Florida. The reactions reported for Quincy and Gainesville, Florida did not conform one with the other, nor with the reactions observed in other localities.

One variety, 6651, which is a rust resistant selection from brown seeded Kentucky Wonder beans, appeared to be highly resistant to or tolerant of rust in all of the localities where it was tested. The other numbered varieties, which are rust resistant selections from Kentucky Wonder, failed to show uniform reactions at all of the test locations. The numbered varieties originated in California, and were selected by the Ferry Morse Seed Company for their resistance to the form of U. phseoli typica prevalent there. The varied reactions obtained with these Kentucky Wonder slections indicate that the California form of the rust may be the same form as that present in southern Florida and coastal Virginia, but not in the other localities.

It may be noted in the data of Table 1 that the differences in varietal reactions between localities are not as sharp as they presumably should be if a single form of the rust fungus is present in each locality. This may result from the presence of two or more rust forms in some localities, thus giving different lists of susceptible varieties. On the other hand, environmental factors (nutrition, humidity, temperature, and light) acting on the suscepts and pathogen may bring about different reactions, and thus somewhat different lists for each locality.

Flecking was the principal reaction noted by the writer on the varieties numbered 6658 and 6659. This type of reaction was not prominent in tests of the other cooperators. Uredospores were the only spore form observed, except at Norfolk, Virginia where teleutospores were the only spore form found on Kentucky Wonder and the numbered varieties. Uredospores were produced exclusively on the other varieties at Norfolk. (Florida Agricultural Experiment Station, December 20, 1937).

SEED INFESTATION WITH GLOMERELLA AND FUSARIUM IN THE 1936 COTTON CROP IN NORTH CAROLINA

S. G. Lehman

During the winter and spring months of 1937 a considerable number of germination tests were made on cotton seed to determine the percentage of infection with disease-producing organisms. In particular it was desired to determine the percentage of seeds carrying viable spores or mycelium of Glomerella gossypii, the fungus causing anthracnose. Thirty-five lots of seed from as many different farms located in nineteen counties in the cotton-

growing area of this State were tested. Twenty-three of the lots tested were collected by Dr. Luther Shaw from farmers with whom he was putting on cotton seed treatment demonstrations. Two samples were produced on two different Experiment Station test farms and the remaining ten samples were from seed which had been sent to the Botany Division of the State Department of Agriculture for germination tests.

The disease tests were made by taking fifty seeds from each lot and placing these on moist, sterile paper toweling, each in a separate culture tube kept at approximately 28° C. After germination each diseased seed or seedling was examined microscopically for conidia of Glomerella gossypii. Note was also made of the presence of other fungi and a germination count was taken.

A summary of the results shows that an average of 81 percent of the seeds in the 35 lots germinated, the standard error of this mean being 2.86. In all but 4 of the 35 lots, 40 percent or more of the seeds had the anthracnose fungus on or in them. The range in percentage of infection with the anthracnost fungus extended from 4 to 96, thus very nearly covering the complete possible range. The mean percentage of infected seeds in the 35 lots was 65.9±, a standard error of 4.21.

A record was also kept of the seeds and seedlings on which Fusarium developed. The average percentage of seeds carrying spores or mycelium of Fusarium was 31.4, the standard error of this mean being 2.89. The count for Fusarium includes many seedlings on which Glomerella gossypii was also found. Fusarium moniliforme was recognized on many of the seedlings. The identity of the other species of Fusarium present was not determined.

The tests described above were made on untreated seed in February and March. In June additional germination and disease tests were made on acid delinted seed from 24 of the 35 lots. The seed were delinted by stirring in concentrated sulphuric acid of commercial grade until all fuzz was removed. They were then washed through three or more changes of tap water, immersed for 5 to 10 minutes in 1 to 1000 solution of mercuric chloride, washed again, dried, and germinated by the method used earlier for the undelinted seed. The percentages of germination, of seeds carrying Glomerella gossypii, and of seeds infected with one or more species of Fusarium in the delinted seed and in the corresponding undelinted samples tested earlier are given in the table. The mean difference, the standard deviation of the differences, and the value of Z as computed by the method of "Student" are also given for each comparison.

Seeds	Mean percentage Untreated	Mean percentage Delinted	Mean difference ± standard deviation	Value of: Z (a)	Remarks
Germinating	75.8	67.6	8.2 ± 12.96	0.63	Significant
With Glomerella gossypii	70.7	8.1	62.6 ± 21.51	2.91	Highly Significant
With Fusarium	31.3	6.3	25.0 ± 17.69	1.41	Highly Significant

(a) For 24 comparisons, a value of Z = 0.45 indicates odds of 42 to 1; and Z = 0.90, odds of 9999 to 1 that the differences are significant.

The average percentage of germination for the acid-delinted seed of the 24 lots tested was 8.2 below that of the untreated seed. The relation of this mean difference, 8.2, to the standard deviation of the 24 differences of which it is the mean gives a Z value of 0.63. Since this is considerably greater than the value usually taken to indicate significance, it appears that delinting as done in these tests had a depressing effect on germination. Of greater interest are the large and highly significant reductions in percentage of seedlings infected by Glomerella gossypii and Fusarium sp. resulting from delinting. That these fungi were not completely eliminated by the treatment was very probably due to internal seed infection.

Seed of Mexican, Cleveland, Farm Relief, Clevewilt, Dixie Triumph, D. P. L., and Half-and Half varieties were represented in the 35 lots tested. The data assembled does not indicate greater prevalence of anthracnose on any one variety nor in any one section of the cotton area of the State.

The percentages of seed infection by Glomerella gossypii and by Fusarium found in these tests are astonishingly high. This together with the almost if not entirely complete prevalence of these parasites in cotton seed is strong argument for promotion of an extension program in cotton seed treatment. (North Carolina Agricultural Experiment Station, Jan. 1).

PLANT DISEASE SURVEY IN SOUTHWEST TEXAS [1]

P. A. Young, G. F. Altstatt, and A. L. Harrison

A disease survey of tomatoes and other crops was made in eight counties in Southwest Texas by the writers on November 16 to 21, 1937. They were aided in this survey by Dr. G. H. Godfrey in the region near Weslaco, and by Dr. S. S. Ivanoff in the region near Crystal City.

[1] Published with the approval of the Director of the Texas Agricultural Experiment Station as paper No. 432 of the Technical Series.

TOMATO DISEASES:

Spotted wilt (virus disease). Tomatoes with spotted wilt were found near Carrizo Springs and Quemado by Dr. J. J. Taubenhaus and Mr. G. E. Altstatt in November, 1935. The survey in 1937 showed tomatoes with spotted wilt in Atascosa, Dimmit, Maverick, Webb, Zapata, and Zavala Counties. In Atascosa County one tomato field showed 22 percent and 4 other fields showed 1 to 8 percent of the tomato plants with spotted wilt. In the other counties mentioned the fields seen showed 0.1 to 3 percent of the plants with spotted wilt. The spotted-wilt virus apparently had entered through the smallest leaflets of the tops and the axillary buds on the stems, as only these leaflets were spotted or killed, and the stem pith near them was browned in nearly all cases examined. In the most badly diseased stems, all of the pith was browned. In mildly diseased plants, the top leaflets showed only numerous dead brown spots and some bronzing. The fruits of affected plants usually showed severe symptoms including depressed, abnormally dark green spots, brown rings one-to three-fourths inch wide, one to four narrow, brown, concentric arc lines, raised greenish blisters with brown wrinkles and depressions, and long ridges or areas of russeted epidermis. Many such brown-marked green fruits were cut and were found to show prominent brown to black internal streaks; one such fruit showed an internal brown ring one-fourth inch wide. Most of the tomato plants affected with spotted wilt were large with several stems each three to five feet long. Diseased plants were unprofitable owing to the killing of the branch tips and the discoloration, dwarfing, and dropping of the fruits. In this region of citrus orchards and winter vegetables, many species of plants bear green leaves in winter.

Curly top (virus disease). Tomato plants were found with prominently rolled, brittle leaflets having purpled hypophyllous veins. When shaken, such leaflets sounded like similarly treated potato leaflets with the leaf roll disease. The tomato symptoms described above closely resemble those of leaf roll on Bliss Triumph potatoes. It seems likely that the curly-top virus causes the leaf roll symptoms in tomato plants. This disease was found in less than 1 percent of the tomato plants seen in Atascosa, Dimmit, Webb, and Zapata Counties in Southwest Texas, and in Cherokee County in East Texas. Tomato plants with these leaf roll symptoms were found in Cherokee County also in 1936. In the counties mentioned in Southwest Texas in 1937, many tomato plants showed the combined symptoms of spotted wilt and the leaf-rolling symptoms supposedly caused by curly top. Other tomato plants showed the leaf-rolling symptoms in the lower leaflets with mottled, distorted, fasciated top leaves indicating a combination of curly top and mosaic viruses in such plants.

Mosaic (virus). Symptoms in tomato leaflets resembling the symptoms of crinkle mosaic in potato leaflets were found in 0.1 to 1 percent of the tomato plants seen in Atascosa, Maverick, Webb, and Zapata Counties. In two fields in Maverick County, 50 to 80 percent of the tomato plants showed mosaic,

while 20 percent of the tomato plants had mosaic in one field in Atascosa County. It is probable that most of this mosaic was caused by the virus of ordinary tobacco mosaic.

Yellow-bordered mosaic. In Zapata County, one tomato plant had downward-curled leaflets with bright yellow margins and a little mottling. A similarly diseased tomato plant was photographed at the Tomato Disease Laboratory in Cherokee County in 1937. This disease probably is caused by a mosaic virus.

Fern leaf. One-third of the tomato plants showed severe to mild symtoms of fern leaf in one eight-acre field in Atascosa County. Nearly 5 percent of these plants showed combined symptoms of fern leaf and mosaic. In Maverick County, two fields showed 1/2 to 4 percent of the tomato plants with fern leaf. Squash and cucumber plants with mosaic were common near tomato fields in the Winter Garden region, which may explain the source of the virus causing fern leaf.

Yellow-top. One field of five acres of tomatoes in Dimmit County showed bright yellow-top leaflets on four-fifths of the plants. Two fields in Atascosa and Zavala Counties showed 1 percent of the tomato plants with this yellow-top abnormality, while only one tomato plant with yellow-top was noticed in Webb County. Near Carrizo Spring, 10 percent of the tomatoes showed yellow-top in one field. The owner of the field said that he did not think that the yellow-top could have been caused by alkali nor excess irrigation water. Possibly tomato yellow-top is caused by a virus or a fertilizer deficiency.

Fasciation. In Webb and Hidalgo Counties, five tomato plants were found with abnormally short, numerous top branches associated with dwarfing of the plants. The top of the stem of one of these plants was prominently flattened. The five tomato plants appeared to be normal except for their fasciated tops. Probably this fasciation represents a genetic abnormality.

Silvery leafburn. Laborers in fields near Laredo left many of the tomato stems and leaves bottom-side up. The lower sides of such tomato leaflets were silvery white to light brown, probably because of this abnormal direct exposure to sunshine. The upper sides of most of these leaflets were normal in appearance, but some of them showed epiphyllous yellowed areas which indicated increased injury to the hypophyllously silvery sunburned leaflets.

Fruit mottle. Especially in Atascosa County, green tomato fruits with prominently darker green dots and vertical lines were found. The green spots did not promptly become normally red in ripening tomatoes. In some severe cases the dark green lines appeared to be associated with narrow vertical corky lines. It is suspected that this is a virus disease.

Root knot (Heterodera marioni). Tomato plants damaged by root knot were found in Atascosa, Maverick, and Webb Counties. Root knot caused extreme damage in two fields in Maverick County, where the root knots were very numerous and one-half to one inch in diameter, and were killing nearly 1 percent of the tomato plants.

Bacterial spot. A few tomato fruits with bacterial spots [Bacterium vesicatorium]* were found in Atascosa County.

Fusarium wilt. Small percentages of tomato plants were dying from fusarium wilt [F. bulbigenum lycopersici] in several fields in Webb, Zavala, Cameron, and Hidalgo Counties.

Southern blight. In three fields in Atascosa and Webb Counties, 0.1 to 1 percent of the tomato plants were dying or dead with a cortical rot showing traces of white mycelium. Sclerotium rolfsii probably was the cause of this injury. However, cultures will be needed to verify this determination.

Early blight (Alternaria solani). Tomato leaves with symptoms of early blight were found in Atascosa and Webb Counties where this disease was too rare to be serious. Early blight was abundant and destructive in several tomato fields seen in Cameron and Hidalgo Counties.

Alternaria fruit mold. Alternaria fasciculata was identified by spores on the black mold on a tomato fruit collected in Webb County. The mold apparently followed blossom-end rot.

Soil rot. A brown soil rot of tomato fruits was found in Atascosa County. Large rings of white mycelium were found on neighboring, green, otherwise normal tomato fruits. The white mycelium probably was Rhizoctonia solani, which usually is the cause of soil rot of tomato fruits in this region.

POTATO DISEASES:

Early blight (Alternaria solani) damaged most of the leaves in a two-acre field in Cameron County.

Fusarium wilt killed or was killing 2 percent of the potato plants in a ten-acre field in Cameron County.

An experimental plat of potatoes at Substation 15 at Weslaco in Hidalgo County showed the following virus diseases: Rugose mosaic with streak and leaf dropping symptoms, mild mosaic, leaf roll, mosaic combined with leaf roll, and a mild type of witches' broom.

[* NOTE: Names of organisms or diseases inserted by the editors of the Reporter are enclosed in brackets.]

EGGPLANT DISEASES:

Yellows (virus) has become abundant and destructive in the Winter Garden region. It was found as follows: 25 percent infection of the plants in one field in Maverick County, 100, 75, and 75 percent in three fields, respectively, in Dimmit County, and 90 percent in one field in Hidalgo County.

Cortical root rot (probably caused by Sclerotium rolfsii) killed 15 percent of the plants in a two-acre field in Maverick County, and caused slight injury in one field in Hidalgo County.

Scoty mold (Fumago?) was abundant on leaves, petioles, and stems of eggplants, var. Florida High Bush, in a field in Dimmit County. The plants were also subject to a heavy infestation of aphids.

PEPPER DISEASES:

Yellow mosaic was found on all of the plants in a ten-acre field of bell peppers in Dimmit County, and in a few pepper plants in Cameron County. The leaves were crinkled, prominently mottled with light green to yellowish spots, and commonly showed the characteristic normal-green bands of tissues beside the veins. The disease seriously decreased the yield of peppers in the field in Dimmit County. Identical symptoms were found in Pimento peppers at the Tomato Disease Laboratory in 1937. Specimens were sent to Dr. S. P. Doolittle who used them in inoculations and reported that the disease apparently is caused by a form of the yellow tobacco mosaic.

Interveinal mosaic seriously damaged 75 percent of the leaves in a two-acre field of bell peppers in Maverick County, but only a few of the leaves in a pepper field in Zapata County. The prominent interveinal mottling of the leaves with occasional dwarfing of the plants were the symptoms of this disease.

Albinism was prominent in one pepper plant in Dimmit County. The cause probably is genetic.

Root knot (caused by Heterodera marioni) damaged 4 percent of the plants in a one-half acre field of chili peppers in Atascosa County. A neighbor said that this variety of pepper is very susceptible to injury by root knot.

BEAN DISEASES:

One-sided mosaic was found on several bean plants in the Wisconsin Refugee variety at Weslaco. The cause is probably genetic.

Rust (Uromyces appendiculatus) [U. phaseoli typica] was abundant on most of the leaves of two fields of garden beans in Atascosa County.

Bean mosaic (ordinary type) was found in garden beans in Atascosa and Zavala Counties.

Powdery mildew (Erysiphe polygoni) was found at Crystal City.

DISEASES OF CUCURBITS:

Cucumber powdery mildew (Erysiphe cichoracearum) was found at Crystal City.

Squash mosaic (cucumber mosaic virus) and powdery mildew (Erysiphe cichoracearum) were found in Atascosa, Zavala, and Zapata Counties.

DISEASES OF OTHER CROPS:

Leaf spot (Cercospora beticola) affected about 10 percent of the laminae in two acres of mangelwurzels in Cameron County.

Curly top (virus) affected half of the leaves in a one-acre field of red beets in Maverick County.

Cowpea rust (Uromyces vignae) damaged 60 percent of the leaves in one-fourth acre of cowpeas in Atascosa County. Powdery mildew (probably Erysiphe polygoni) was found on all of the plants in one-fourth acre of cowpeas in Atascosa County.

Peach rust (Tranzschelia punctata) [T. pruni-spinosae] occurred on most of the leaves in destructive form on one peach tree at Winter Haven in Dimmit County.

Mosaic of Solanum elaeagnifolium was found in Webb County, and an unidentified powdery mildew was also common.

SUMMARY:

The following diseases apparently are reported here for the first time from Texas.

Tomato diseases:
Curly top (leaf roll symptoms),
Yellow bordered mosaic,
Fern leaf,
Yellow top,
Fasciation
Gloeosporium fruit rot,
Silvery leafburn,
Fruit mottle.

Potato diseases:
Rugose mosaic,
Witches' broom (mild type)

Garden bean diseases:
One-sided mosaic,
Powdery mildew (probably Erysiphe polygoni).

Solanum elaeagnifolium Cav.:
Mosaic.

Eggplant:
Sooty mold.

Pepper:
Yellow mosaic,
Albinism.

This report gives additional information about the symptoms and distribution of spotted wilt of tomatoes in Texas. (Texas Agricultural Experiment Station, Dec. 18, 1937).

NOTES ON FRUIT DISEASES IN THE OZARK SECTION OF MISSOURI IN 1937

M. A. Smith

The season of 1937 was marked by an abundance of moisture until July 1 and moderate temperatures throughout the summer. These conditions were favorable for the occurrence of a number of fruit diseases and were in marked contrast to the prolonged drought and high temperatures of 1936. The following is a summary of notes on the occurrence of fruit diseases in 1937:

Apple scab (Venturia inaequalis): One outstanding feature of the 1937 season was the severe outbreak of apple scab in the Mountain Grove district and to a lesser extent in the Cape Girardeau district. A study of perithecia showed that they were late in maturing. Ascosporic discharges were not observed until May 2 at Mountain Grove. From that date until May 22 ascospores were caught in spore trap slides eight times. The heaviest discharges occurred during the period May 8 to 12. In spite of the lateness of its appearance, apple scab quickly became established following a series of rains in May and early June. Unsprayed trees were partially defoliated by June 15. Good scab control was obtained in well-sprayed commercial orchards. In some localities a period of rainfall just previous to the bloom made extra fungicidal applications necessary. In many instances these applications were made while trees were in full bloom. Pedicel infection was again prevalent in 1937. Forty percent of the drops from some trees showed this type of infection.

Apple blotch (Phyllosticta solitaria): In the Mountain Grove district leaf and fruit infections were more prevalent than usual on such varieties as Duchess and Colton. In unsprayed blocks of these varieties 90 percent of the fruits were affected. This disease was well controlled in commercial orchards.

Apple bitter rot (Glomerella cingulata): This disease was observed in a few scattered plantings of Willow Twig and Huntsman but assumed no commercial importance in 1937.

Peach leaf curl (Taphrina deformans): Peach leaf curl was prevalent in many of the unsprayed orchards observed this spring. The severity of the disease varied considerably. Most of the loss was confined to the foliage though on some trees many affected fruits were seen.

Peach brown rot (Sclerotinia fructicola): Brown rot was generally more prevalent on peaches this season than for the past six years. Environmental conditions, which were favorable for the disease in the Mountain Grove and Koshkonong districts in 1937, made a thorough spray program necessary.

Pear leaf spot (Fabraea maculata): Infection of unsprayed Kieffer pear trees was first observed on May 11. This disease, while later in appearance than usual, became prevalent throughout the southern half of Missouri by mid-summer. Fruit infection, while noted in some unsprayed orchards, was in general less severe than in 1935.

The canker phase of the disease which was commonly seen in 1935 was again prevalent in 1937.

Cedar apple rust (Gymnosporangium spp.): G. juniperi-virginianae and G. germinale [G. clavipes] were very prevalent in Missouri in 1937. In experimental plots at Mountain Grove, G. juniperi-virginianae infection was very severe on foliage of Rome Beauty. In one of the unsprayed plots, 14 percent of the fruits were infected. G. germinale was found on the variety Red Delicious in scattered orchards. In one orchard near Robertsville, Franklin County an entire crop of Red Delicious was destroyed by this rust. Subsequent investigation showed this orchard to be almost surrounded by a hedge of red cedars.

G. globosum was very prevalent on pear foliage in the experimental plots on the University campus.

Cherry leaf spot (Coccomyces hiemalis): Environmental conditions during May and June favored the spread of this disease. Some commercial plantings of Early Richmond and Montmorency in the vicinity of Exeter suffered severe defoliation and in several instances the fungus directly attacked the fruit. (Division of Fruit and Vegetable Crops and Diseases, and Missouri Agricultural Experiment Station, Dec. 16, 1937).

PROGRESS REPORT OF BROWN ROT INVESTIGATION CONDUCTED DURING 1937 IN CLARK COUNTY, WASHINGTON

Glenn A. Huber and Karl E. Baur

According to the Washington Tree Fruit Survey of 1936 (mimeograph statement of Division of Farm Management and Agricultural Economics, Washington Agricultural Experiment Station) there are 776,769 prune, 215,853 sour cherry, and 54,356 sweet cherry trees in western Washington, or approximately 7,192, 1,999, and 503 acres of prunes, sour cherries, and sweet cherries, respectively. The sweet cherry acreage is small and widely scattered, but the sour cherry and prune acreage is larger, more or less localized, and is of economic importance. For instance, there are approximately 6,500 acres of prunes in Clark County alone.

The brown rot disease (caused by Sclerotinia spp.) causes some loss to the stone fruit crop every year, and occasionally occurs in epidemic form, causing serious damage. The disease was especially severe in 1936. Although no definite data were obtained, it was estimated that the disease caused approximately a 60 percent reduction in the prune crop, 40 percent in the sour cherry, and 90 percent in the sweet cherry.

An investigation of the brown rot problem was started in April, 1937. The work was confined to the disease on prunes in Clark County. The first observations were made April 19-24, inclusive. At that time the majority of blossoms were opened and numerous "spore-cups", apothecia, were developing from the mummies on the ground. Examination of blossoms in fifteen widely scattered orchards failed to reveal blossom blight. At present the investigators are giving the weather credit for the absence of blossom blight, because during this period, even though the humidity was very high, the temperature seldom rose above 56° F.

No brown rot infection was observed in orchards during the early part of fruit development.

During the fore part of August when the fruit was approximately half developed some of the prunes began to drop. Examinations revealed that the fruit pedicels became discolored first at the point of attachment to the fruiting spur or twig. At the time this discoloration was observed the fruit showed a very slight shriveling at the pedicel end. The discoloration, followed by death of the affected tissue, advanced toward the fruit which gradually shriveled and dried. After the discoloration of the pedicels had advanced to the fruit, many of the prunes became slightly soft at the pedicel-end and the flesh became discolored. Isolations from the soft ends of shriveled fruit collected from trees yielded 100 percent pure cultures of an undetermined fungus. Isolations from pedicels showing the dead area only part way to the fruit yielded 89 percent pure cultures of the same organism. Isolations from the spur or twig at the point of attachment of the dead pedicel yielded 28 percent of the same organism.

Inoculations into fruiting spurs, pedicels, and fruit proved this undetermined fungus to be pathogenic. Although the organism was obtained consistently by isolations and was proven to be pathogenic, the primary cause for the fruit drop may have been due to some other factor.

Trees were shaken in an orchard on August 19 to remove the unsound fruit. The number of unsound prunes that dropped ranged from 650 to 1,180 per tree with an average of 870. This was approximately 42 percent of the total fruit per tree. The unsound fruit became detached from the tree at the point where the pedicels were attached to the twigs. Even when the trees were severely shaken only a few sound fruits dropped. Approximately one-sixth of the affected fruit remained on the unshaken trees until harvest.

On August 26, fallen fruits showing no brown rot were collected and placed in moist chambers. Brown rot developed on approximately 6 percent of these fruits. After a thorough surface sterilization, isolations were made from the interior near the pedicel end. Eighty percent of these yielded pure cultures of the same fungus obtained from the unsound fruit collected from the trees. Six percent yielded the brown rot organism (S. fructicola).

Counts of the fallen prunes, showing brown rot sporulation, were made in six orchards in the Sera and Felida districts on September 1, following a two day rain. The percentage of fruit affected with brown rot found on the ground in these orchards ranged from 11+ to 62 percent, with an average of 34 percent brown rot per orchard. The fruit on the trees in these orchards showed less than 2 percent brown rot. These affected fruits would have fallen before sporulation took place had the trees been shaken.

Observations made following the rain revealed considerable splitting of fruit. Counts taken in five widely scattered orchards showed as high as 12 percent split fruit that were unmarketable. Hand-lens examinations of apparently sound fruit showed a network of tiny cracks in the skin around the pedicels. This was, no doubt, responsible for the large amount of shriveling of the fruit at the pedicel-end previous to harvest. The shriveling was due to the loss of water from that portion of the fruit. The splitting and cracking was not only responsible for the shriveling, but also afforded openings through which the brown rot could easily gain entrance to the fruit. In some orchards as much as 40 percent of the fruit on the trees was affected with brown rot at the beginning of harvest. It was evident that infection took place in the majority of cases through injuries.

On October 22, 237 twigs, to which fruit affected with brown rot were attached, were collected from an unharvested orchard and examined. One hundred and thirteen of these showed dead streaks extending into the twig from the mummy and 86 showed a definite killing of the twig. No streaking was observed in twigs where healthy fruit had been attached. The exterior of the fruit was thoroughly sterilized and isolations were made from the interior adjacent to the pits. The European form of brown rot, S. laxa, exceeded the American form, S. fructicola by two to one. (Western Washington Experiment Station, Puyallup. Excerpts from paper presented to Western Washington Horticultural Society).

OBSERVATIONS ON DISEASES OF FRUIT CROPS IN DADE COUNTY, FLORIDA, IN 1937

Geo. D. Ruehle

AVOCADO:

The 1937 growing season was very favorable and a large crop of avocados was produced very generally.

Avocado scab (Sphaceloma perseae) occurred in a severe form as usual on the Lula variety. Fruit infections ranged from less than 10 percent in groves that were well sprayed to 100 percent in unsprayed trees, with an average of approximately 25 percent for the variety. Losses from this blemish were considerable, because fruits moderately to severely infected are being marketed as second grade and cull fruit respectively. Scab also occurred in moderate to severe form on some unsprayed seedlings and on unsprayed trees of the Fuerte, Linda, and Taylor varieties. It was observed in a mild form occurring in trees of the Waldin, Trapp, Itzamna, and several minor varieties.

Cercospora spot or blotch (Cercospora sp.) and anthracnose (Colletotrichum sp.) were considered by some packing house men and growers to be slightly more abundant than during 1936. The severity of infection, however, depended upon the variety and upon the thoroughness and timeliness of spraying. On highly susceptible varieties such as Waldin and Trapp, copper sprays applied in May and repeated at 4- to 5-week intervals in June and July gave excellent control. Bordeaux mixture 3-3-50 or its fungicidal equivalent in one of the neutral or basic copper compounds gave about equal results. Fruit infection in trees sprayed in this manner ranged from 3 to 10 percent, but was frequently 80 percent in unsprayed trees. Apparently none of the commercial varieties is immune although several are highly resistant and require less spraying for the control of these diseases.

Powdery mildew (Oidium sp.) was much less evident on avocado foliage this season than during 1936 and was of very minor importance.

Tip-burn of the leaves was observed in several groves, following the use of calcium cyanamide as the source of nitrogen in the fertilizer. At the Experiment Station, where this material is being tested experimentally, this condition was more severe on trees of the Waldin and Lula varieties that were bearing a heavy crop of fruit than on trees of the Pollock, Trapp, Collinson, and Linda varieties that were bearing a light crop.

A chlorotic condition of the leaves resembling mottle-leaf or "frenching" of citrus foliage was observed in a number of groves this past season, but was of minor importance.

CITRUS:

Generally, the trees in older bearing groves are still showing some harmful effects from the hurricanes of 1935. In many cases the trees have remained sparse of foliage with considerable chlorosis accompanied by a dying back of the smaller twigs and branches. Low prices for grapefruit and oranges have discouraged efforts on the part of growers to hasten recovery of storm-damaged trees by pruning or other cultural practices. This condition has distinctly favored the development of certain weakly parasitic fungi such as Diaporthe citri and Colletotrichum sp.

Melanose (Diaporthe citri) was quite severe on the spring flush of foliage and on the fruits produced in the older bearing grapefruit and orange trees. Control of the blemish on the fruits by spraying was difficult because of irregularity of blossoming, which makes timing of sprays for greatest efficiency practically impossible. Infection of the summer flush of foliage was less severe than in 1936.

Citrus scab (Sphaceloma fawcettii) was more abundant than in average years but was somewhat less severe than in 1936. It was readily controlled in grapefruit groves by spraying with bordeaux mixture or other copper sprays according to standard practice. Scab was also quite general in a mild form on the Persian lime.

Decay on the tree of maturing tangerines, tangelos, and early oranges (Alternaria citri, Penicillium sp., Colletotrichum sp.) was more serious than usual. The decay in most cases followed stings of plant bugs which were more abundant than usual during the fall months. Low temperatures occurring in November and December slowed up the activities of these insects so that less damage of this type is expected on the late oranges.

Lime bark disease (Diplodia sp. for the most part) was responsible for the death of approximately 5 percent of the Persian lime and Perrine lemon trees under six years of age. Trees budded to grapefruit rootstocks appear to be more susceptible than when budded to other rootstocks. The disease is not spreading at an increasingly rapid rate but no real remedy has been found for it up to the present time. Adequate irrigation during drouthy periods is apparently beneficial.

Anthracnose (Gloeosporium limetticolum) was very severe on the Key lime in the vicinity of Homestead. Spraying with copper sprays every two weeks during the fruiting period gave only partial control of the disease.

Mottle-leaf or "frenching" was generally present particularly in orange trees, but was less evident than during 1936. Attempts to correct this condition by a single application of zinc-lime spray (5-2½-100 formula) have given poor results.

Stylar-end rot of Persian limes (non-parasitic) was more abundant than in any past season, although this trouble is still of minor importance in Dade County.

Gumming of immature grapefruit (non-parasitic) affected approximately 10 percent of the fruits in one grove, and was observed on an occasional fruit in several other groves.

In many citrus groves in the vicinity of Homestead, a sudden drying or "scorching" of leaves accompanied by partial defoliation, followed the occurrence of strong winds late in November after a drouthy period of several weeks. The condition was more severe in trees bearing a heavy crop of fruit.

MANGO:

A very light crop of Haden mangos was harvested. This was due primarily to failure of the trees to produce blossoms rather than to disease or to rain at the blossoming period.

Anthracnose (Colletotrichum sp.) was abundant as usual on foliage, bloom spikes, and fruits, and caused crop failure in unsprayed trees that blossomed.

GUAVA:

Aside from fruit rots (Colletotrichum sp. and others) the guava was quite free from serious diseases during the past season.

A leaf-spotting caused by the parasitic red alga Cephaleuros mycoidea was observed generally on this host and was occasionally serious in dense clumps of guava trees growing in the wild state.

A fruit blemish of undetermined etiology was frequently observed late in the summer. The skin of affected fruits is rendered unsightly by the presence of numerous scattered to confluent, dark brown irregular or angular patches which usually do not exceed 2 mm. in diameter. Attempts to isolate an organism from the blemish have thus far resulted in failure. All varieties or strains of the guava do not appear to be affected. The blemish is more abundant on fruits close to the ground than on those situated higher in the tree.

MINOR FRUITS:

Fruit rots (Colletotrichum sp., Diplodia sp., etc.) and leaf spot (Puccinionsis caricae) were common and destructive on unsprayed papayas.

Blotch (Mycosphaerella lythracearum) was very common and destructive on the pomegranate, causing partial defoliation and severe blemishing of the fruit.

Rust (Uredo lucumae) was observed on scattered specimens of canistel or ti-es [Lucuma nervosa] but was doing little damage.

Cercospora coffeicola was observed on leaves and fruits of Coffea arabica at the Experiment Station. Potted plants under a slathouse were severely infected but larger plants growing in the open sustained little damage from the disease.

The loquat was generally infected with a minor disease which manifests itself as ashy-gray foliar spots. An unidentified species of Pestalotia was invariably present in the spots and proved to be weakly parasitic to the loquat upon inoculation.

An unidentified species of Cercospora causing a leaf spot and responsible for partial defoliation of the cassava, occurred on specimens of this plant growing at the Experiment Station.

Rust (Tranzschelia pruni-spinosae) was common and destructive on the peach. (Sub-Tropical Experiment Station, Homestead, Florida).

NUT DISEASES IN THE PACIFIC NORTHWEST IN 1937

P. W. Miller

PERSIAN (ENGLISH) WALNUT DISEASES

Walnut blight (caused by Phytomonas juglandis (Pierce) Bergey et al.) [Bacterium juglandis (Pierce) EFS]. -- The season of 1937 was one of moderately severe blight infection in the Pacific Northwest, the percentage of infected nuts in untreated orchards varying from 30 to 95 percent. The most severe losses occurred in the Silverton, Oregon district where it is estimated that from 50 to 75 percent of the crop in unsprayed orchards was lost from this disease. For the Pacific Northwest as a whole it is estimated that approximately 25 percent of the potential 1937 walnut crop was destroyed by blight.

Walnut blotch (caused by Marssonia juglandis (Lib.) Sacc.) -- This disease occurred on the nuts, leaves, and stems of current growth of seedling Persian walnuts growing in a planting near Ferndale, Washington. Walnut blotch was of no economic importance in 1937, however, as it was not noted in any other region in the Pacific Northwest.

Ring spot (caused by Ascochyta juglandis Bolt.) -- This disease occurred on leaves of Juglans regia in a number of widely scattered orchards in western Oregon. Ring spot was apparently of minor importance in 1937, though as the lesions were not sufficiently abundant per leaf infected to cause premature defoliation.

Downy spot (caused by Microstroma juglandis (Berong.) Sacc.) -- This disease was found in limited amounts on leaves of Persian walnuts in a number of widely distributed orchards in Oregon. Downy spot was not as prevalent this season as in 1936. It was of only minor importance as it did not cause premature shedding of the leaves.

Phyllosticta leaf spot (caused by Phyllosticta juglandis (DC.) Sacc.) This disease occurred on leaves of Persian walnuts near Eugene, Oregon. This particular leaf spot has not been reported heretofore on Juglans regia in the Pacific Northwest. The disease was not severe enough, however, to cause any premature shedding of the leaves.

Leaf scorch (non-parasitic). -- This disorder was widely distributed in the Pacific Northwest in 1937. In general, it was more prevalent than in 1936. While this condition did not cause any considerable amount of premature defoliation, it did decrease the functional leaf area appreciably in those orchards where it was particularly abundant.

Walnut shrivel (non-parasitic) -- This disorder, which is characterized by partially to completely shriveled kernels in the nuts, was widespread throughout the Pacific Northwest in 1937. In general, shrivel was worst in the crops from the hill orchards than from the river bottoms. In some orchards over 50 percent of the crop contained shriveled or partially shriveled nut "meats". While the cause or causes of this condition are not definitely known as yet, it may possibly be associated with a scarcity of food reserves in the branches and roots due, in part, to the unusually dry fall of 1936 which caused the foliage to drop earlier in the season than normal and, in part, to the fact that the trees have not fully recovered from the damage done by the unseasonably early freeze which occurred in the Pacific Northwest during the forepart of November, 1935.

Walnut "girdle" (non-parasitic). -- Walnut girdle, a disorder of grafted Persian walnuts characterized by a rupturing of the cambium at the union of the black walnut rootstock and the Persian top, caused the death of a number of walnut trees in Oregon during 1937. The only trees found affected so far are Persian walnuts of the Franquette variety grafted on black walnut rootstocks. Persian walnuts grafted on Persian walnut rootstocks have not developed this trouble so far.

FILBERT DISEASES

Bacterial blight (caused by Phytomonas [Bacterium] sp.). -- This disease was not as prevalent nor as severe, on the whole, as in 1936. In general, young orchards from two to four years of age were more severely infected than older plantings. It is estimated that this disease caused a death of from 5 to 35 percent of the trees in young orchards under 5 years of age, the average loss being approximately 10 percent. The disease caused but very little damage to older, bearing Barcelona orchards in 1937. Many bearing Brixnut plantings, on the contrary, were severely injured. While the disease did not kill the trees, many pistillate flower buds, nut-bearing shoots and branches were killed, thereby indirectly reducing the crop appreciably. It is estimated that bacterial blight indirectly caused a 25 percent reduction in the Brixnut crop

Mildew (caused by Phyllactinia corylea (Pers.) Karst.). -- Filbert mildew was very abundant in Oregon during the latter part of 1937 on the undersurface of leaves of the cultivated filbert. The disease was apparently of minor economic importance, though, as the infected leaves retained their normal green color and persisted on the trees up to the time of normal leaf fall. It is believed that the lateness of the attack may be responsible for the small amount of damage which seemingly occurred.

Leaf scald (non-parasitic). -- A non-parasitic disorder of filbert leaves, characterized by a dying of the tissues at the margins, was widely distributed in the Pacific Northwest in 1937. Many of the leaves affected with this trouble dropped prematurely. The Brixnut variety was more severely affected than any other commercial variety grown in Oregon and Washington.

Brownstain (non-parasitic). -- This disorder was present but in only very limited amounts this year in most orchards in the Pacific Northwest. It is estimated that the loss from this trouble did not exceed one-half of one percent of the current crop.

Filbert shrivel (non-parasitic). -- This disorder, which results in the failure of the embryo to develop, was present in greater or less amounts in 1937 in practically all filbert orchards in the Pacific Northwest. While it occurred in all varieties grown in Oregon and Washington, it was most prevalent in the Brixnut and Barcelona varieties. In certain plantings of these varieties as much as 15 percent of the crop was affected with this disorder. However, for the Pacific Northwest as a whole, it is estimated that not more than 5 percent of the 1937 filbert crop were "blanks" due to shrivel.

Bitter pit (non-parasitic). -- A non-parasitic disorder of filbert kernels, characterized by the presence of small, sunken, brown to black spots of a spongy consistency and bitter in taste, occurred in limited amounts in Oregon in 1937. The Daviana variety was the chief variety affected. For the Pacific Northwest, as a whole, it is estimated that not more than one percent of the current filbert crop was affected.

Sunscald (non-parasitic). -- Sunscald, due to the occurrence of high temperatures during the months of June, July, and August was responsible for the devitalization and death of many young filbert trees, one to three years of age. This was especially true in orchards where no attempt was made to shade the tender bark by trunk protectors. The trees were partially to completely girdled by the "heat" cankers which developed in the bark of the trunk at or near the ground line. (Division of Fruit and Vegetable Crops and Diseases).

VERTICILLIUM WILT OF MAPLE AND ELM IN THE PACIFIC NORTHWEST

J. L. Bedwell and T. W. Childs

Disease survey notes, pathological observation data, and herbarium specimens of this office indicate that verticillium wilt of trees is becoming increasingly prevalent in the Pacific Northwest.

Attention of members of this office was first directed to a case of verticillium wilt in October 1923 when a commercial tree nursery at Troutdale near Portland, Oregon, suffered severe losses in transplanted Norway maples. In one field 85 percent of the transplants were killed. Although Norway maples (Acer platanoides) were the most affected, heavy losses were also suffered in the beds containing grafted trees of A. platanoides var. schwedleri on Norway maple root stocks. Potatoes had been grown on this ground before it was used for tree nursery purposes. The disease at this nursery had been determined by pathologists at Oregon State College as being caused by Verticillium before it was reported to this office. G. F. Gravatt in a letter concerning this occurrence wrote in part as follows: "I do not believe that the Verticillium has been reported on maple from the Northwest previous to this report, but I have been expecting it owing to the fact that the Verticillium is reported as present on Irish potatoes and raspberries in the Northwest."

Verticillium wilt on native bigleaf maples (Acer macrophyllum Pursh.) was observed by members of this Division in 1936 for the first time in this region. About twelve miles east of Portland a few trees in a roadside planting and in the neighboring woodland showed symptoms of wilting on a few branches. Verticillium was considered responsible since the green vascular staining was present in many of the branches which were cut and sectioned. During the 1937 field season occasional wilting of bigleaf maple was noticed throughout western Oregon and Washington on shade and native trees as far south as Cottage Grove, Oregon and as far north as Quilcene, Washington. The wilting was characteristic of Verticillium and all other corroborating symptoms as listed by Gravatt 1/ were found on most of the trees that were

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1/ G. F. Gravatt. Maple Wilt. U.S.D.A. Dept. Circ. 382, May 1926.

carefully examined. No cases of slime flux were observed in association with wilting, however, and many of the wilted trees or parts of trees failed to yield any green vascular staining. Gravatt 1/ p. 8, pointed out that it is often difficult to tell whether Verticillium is present without cutting up the tree. In these doubtful cases the wilting may have been caused by some other agency or factor. It appears now that the prolonged dry spell in the fall of 1936 played a part in the increased prevalence of the wilt during the summer and fall of 1937.

In the spring of 1937 a single ornamental tree of Japanese red maple (Acer palmatum Thunb.) in a private yard in the northwest section of Portland, Oregon, was badly wilted by Verticillium. The determination was verified by R. B. Clapper, Division of Forest Pathology, Washington, D. C.

In July 1936 an American elm shade tree at a private home in the northeast section of Portland, Oregon, was wilted by Verticillium. Positive determination was obtained from the Dutch Elm Disease Laboratory, Morristown, New Jersey. This tree had been reported to Mr. J. S. Wieman, Superintendent of Nursery Inspection for Oregon, who called it to the attention of this office. (Division of Forest Pathology, Bureau of Plant Industry, maintained at Portland, Oregon in cooperation with United States Forest Service).

DODDER IN FOREST NURSERIES

Dennis H. Latham, Kenneth F. Baker, Carl Hartley,
and William C. Davis

Dodder (Cuscuta sp.) has been found frequently in forest and erosion-control nurseries, doing considerable damage in small local areas but in no case causing serious loss. Findings follow:

On black locust (Robinia pseudoacacia) at College Park, Maryland, 1934, Jonesboro, Illinois, 1935, in single nurseries in Missouri and Arkansas, 1936, and at Hopkinsville, Kentucky, 1937. At Jonesboro it was removed from the plants with fair success by local Forest Service personnel by use of a rake or comb made by driving several rows of long nails through a board, to which a long handle was then attached. At the worst-infected of these nurseries the loss resulting from complete eradication of the infected spots and the healthy seedlings at the margins was less than 1 percent.

Green ash (Fraxinus pennsylvanica lanceolata) was infected at a number of local patches in 1934 at College Park, Maryland, and in 1935 at Pierre, South Dakota. At Pierre adjacent Russian olive, caragana, honey locust, black walnut, and American and Chinese elms remained free. White ash (F. americana) was infected in 1937 at College Park, and at Hopkinsville, and to the extent of less than 1 percent at Jackson, Tennessee. Black walnut was also infected at Hopkinsville.

A heretofore unreported observation of its occurrence on Carolina poplar (Populus sp.) was made at Halsey, Nebraska in 1911. (Division of Forest Pathology, Bureau of Plant Industry, and Civilian Conservation Corps).

PHOMOPSIS BLIGHT IN SOME FOREST TREE NURSERIES

William C. Davis and Dennis H. Latham

Phomopsis blight was in evidence during the 1937 growing season at most of the nurseries producing cedars. The losses varied from slight to 50 and even 75 percent of the entire stand. At some nurseries spraying with 4-4-50 Bordeaux seemed to reduce losses; normal Semesan was apparently as effective as the Bordeaux. The hosts, location, and extent of loss are given in the following table:

Place	Host	Extent of loss
Brownstown, Ind.	Thuja occidentalis	Heavy
Vallonia, Ind.	Juniperus virginiana	Slight
Hopkinsville, Ky.	" "	"
Paducah, Ky.	" "	Negligible
" "	Juniperus ashei	"
Elsberry, Mo.	" "	"
Licking, Mo.	" "	"
Chapel Hill, N. C.	Juniperus virginiana	Heavy
Clayton, N. C.	" "	Slight
" " "	Chamaecyparis thyoides	None
Hoffman, N. C.	Juniperus virginiana	Slight
Lebanon, Tenn.	" "	Moderate
Charlottesville, Va.	" "	"
Gretna, Va.	" "	Heavy

(Civilian Conservation Corps and Bureau of Plant Industry).

BRIEF NOTES ON PLANT DISEASES

POTATO LATE BLIGHT IN EASTERN VIRGINIA: Specimens of fall grown potatoes affected with late blight (Phytophthora infestans) were received from a storage house at Melfa, Virginia today. A letter from the county agent said that the disease was causing much damage in the storage houses on the Eastern Shore and that many of the potatoes stored in kilns have been practically a complete loss. (Harold T. Cook, Virginia Truck Experiment Station, Norfolk. Jan. 6).

VERTICILLIUM ON COLEUS IN CONNECTICUT: For three successive years a Verticillium sp. has been isolated from coleus growing on the grounds of the Connecticut Agricultural Experiment Station. Plants have been inoculated and the fungus has been recovered from them. In the Director's Report of February 1936, Bull. 381, this host was mentioned in the list of fungi occurring on new hosts. Since the fungus appears to be very virulent on some varieties of coleus it seems worth while to make an additional note of it. (Florence A. McCormick, Dec. 16. Connecticut Agricultural Experiment Station).

RUST ON CHRYSANTHEMUM IN LOUISIANA: I wish to report the occurrence of chrysanthemum rust [Puccinia chrysanthemi Roze] in Louisiana. It was found on December 11 on chrysanthemum plants (species and variety unknown) in a garden in Baton Rouge. As far as our files show, this is the first time that chrysanthemum rust has been found in Louisiana. (A. G. Plakidas, Louisiana Agricultural Experiment Station).

THE WEATHER OF 1937

Notwithstanding the extremely low temperatures in the western half of the country during January, 1937 averaged warmer than normal rather generally in that area and also in the more eastern States. Figure 1 shows that temperatures for the year averaged slightly below normal in most Ohio and Mississippi Valley districts, but elsewhere, except locally, the averages were from slightly above to considerably above normal, with some areas showing plus departures of 1° to around 2°.

Temperature extremes for the year were fairly wide; the highest reported was 124° at Cow Creek, Inyo County, California, and the lowest -56° in Yellowstone Park, Wyoming. Minima of -50°, or lower, were reported for Montana, Washington, and Oregon. As usual, freezing weather in July, normally the warmest month of the year, was reported from a number of higher elevations of the West in nine different States. The lowest July temperature was 20° at Austin, Oregon , and for August, 13° at Seneca, Oregon.

Figure 2 shows that precipitation for the year was above normal rather generally east of the Mississippi River, except in some southeastern districts and in the northwestern parts of the area. On the other hand between the Mississippi River and Pacific Coast States the amounts were generally deficient, except locally. The greatest deficiencies, based on the normal, are shown for the southwestern Plains, southwestern Texas, southern New Mexico, and central Arizona. Parts of eastern Kansas, southwestern Kansas and southeastern Colorado received only about 60 percent of normal rainfall for the year. The Ohio Valley excesses were due largely to the extremely heavy rainfall in January.

In contrast to 1936, there were no spectacular storms during 1937, including little or no damage from tropical hurricanes to the continental United States. However, January brought the most disastrous flood of record to the Ohio Valley, and two destructive freezes to California. (Weekly Weather and Crop Bulletin for the week ending January 4, 1938).

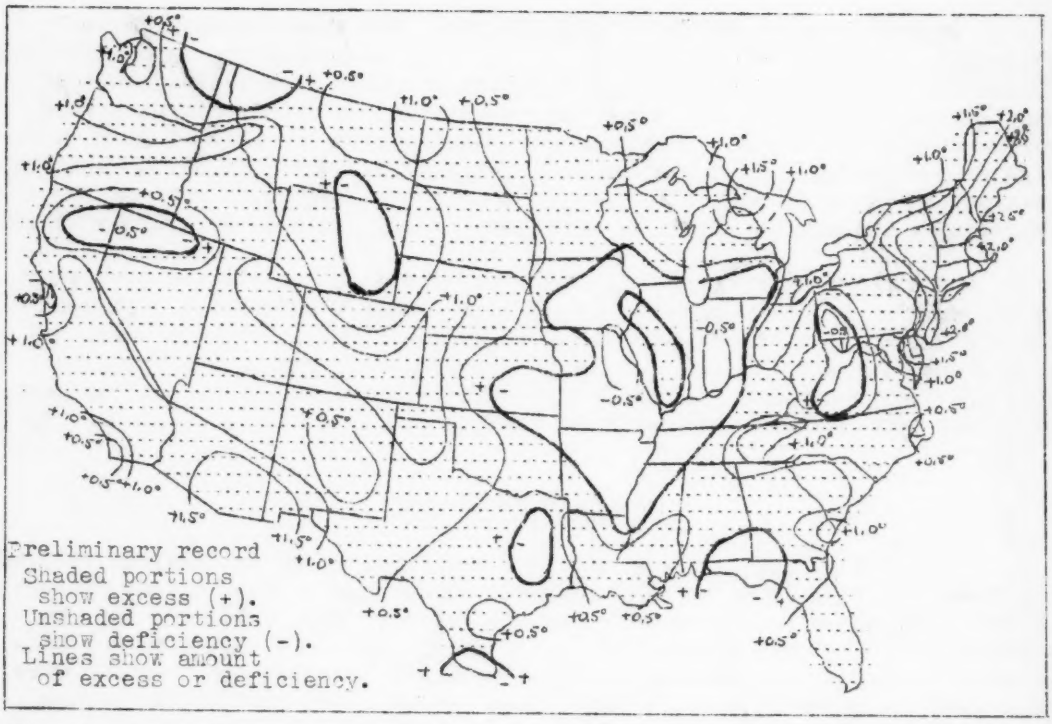
Preliminary record
Shaded portions show excess (+).
Unshaded portions show deficiency (-).
Lines show amount of excess or deficiency.

Fig. 1. Departure of Mean Temperature from the Normal for the Year 1937.

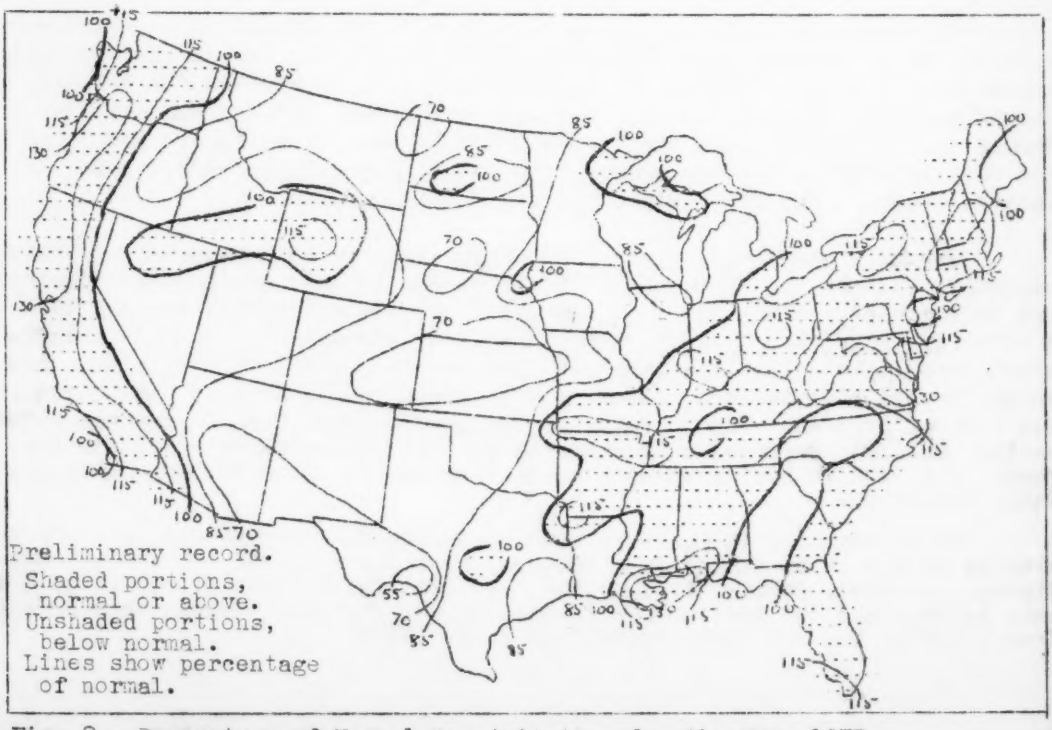

Fig. 2. Percentage of Normal Precipitation for the Year 1937.